

## INTEGRATED DESIGN OF LEARNING SCIENCE SHARE TYPEON

### THE CONCEPT OF PRESSURETHE SUBSTANCE

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#### ABSTRACT

*Government regulation number 65 of 2013 that the substance of science subjects junior high school an integrated science. Integrated science teaching science teacher professional demands, capable of mastering the material science in an integrated manner, for junior high school content standards in the curriculum include a statement that the group of science subjects for the purpose of obtaining cultures thinks and behave scientifically critical (Kemendikbud, 2013). Curriculum 2013 of junior high school demanded in integrated science teaching, known as integrated science (Culture, 2013). The purpose of this study provides an overview of instructional design types share the concept of pressure in order to facilitate the process of learning science as well as in this study provides an overview of formative assessment that can be implemented related to the design of integrated science discussed. Instructional design type of pressure, which share the concept of two disciplines that teach physics and biology in which there is the achievement of knowledge, skills, and attitudes. These types of instructional design teaches share pascal's law concepts and blood pressure simultaneously, because where these concepts have linkages interconnected, as well as the legal concept of hydrostatic and transport in plants. Data obtained from this study through literature study, observation and interviews. Based on observations and interviews with teachers teaching science at a junior high school in Indonesia stated that the application of science teaching integrated into the junior high school is still having some problems as a science teacher at junior high school still educational background is different, so there are many teachers who have difficulty in implementing an integrated science teaching.*

**KEYWORDS:** *Integrated Science, Share Type Design & Concept Pressure*

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#### INTRODUCTION

Government regulation of education and culture office number 65 in 2013, describes a process standard criteria for the implementation of learning in the educational unit to achieve competency standards. The standard consists of the planning process of the learning process, learning outcomes assessment, and monitoring of the learning process for the implementation of the learning process effective and efficient (Kemendikbud, 2013). Achievement standards this process is supported by adherence to science teaching integrated, for which the standard process has the goal of classroom lessons can take place in an effective, efficient and innovative, this can be achieved if a teacher can implement the learning in an integrated manner with other words Sciences nature in junior high school should be taught in an integrated (Kemendikbud, 2013).

Middle school level science teaching according to the curriculum in 2013 emphasized the implementation of an integrated science teaching since 2014. The first middle school in the curriculum in 2013 to change the concept of learning was developed as a subject interagtive science or integrated science, not as educational

disciplines. This is shown in the core competencies (KI) and basic competence (KD) in science teaching, there are several concepts that integrate science concepts from the field of physics, biology, chemistry, and earth and space science (IPBA). Based on this, the government seeks to provide support for integrated learning process is carried out well, other than that the government is also providing support to the training of teachers to support the implementation of science with good alignment (Culture, 2013).

Based on observations at one junior high school in Indonesia, learning science at school is still in the form of separate learning the concepts of physics, biology, and chemistry. Though the expected process of learning science at the junior high school is not implemented in the form of a separate, but are presented in the form of a piece between several disciplines (physics, biology, chemistry and IPBA) this is because educators are no schools still have disciplines are different so have difficulty in implementing an integrated learning. Integrated science teaching, if presented in the form of separate or not will make a partial repetition of material so that it takes time and energy that is quite a lot and make students feel bored receive materials delivered (Febriana, Sudarmi, and Ferdy, 2015). Based on the above, then teachers need to design a model of integrated science teaching in junior high school level because the learning model of integrated science will make learning to be effective and efficient. Besides making the students can recognize, accept, absorb and understand the connection or relationship between the concepts of knowledge and values or actions described in alignment, so that learners can think broadly and deeply to capture and understand the conceptual relationship presented in the learning process, as well as make the learners accustomed to thinking focused, organized, complete, thorough and make the students motivated in learning and learners felt that learning is meaningful (Ekapti Faradisya & Ahied, 2016)

## METHODS

This research method is by analyzing syllabus for teaching science junior high school curriculum 2013 subject pressure, KD 3.8 and 4.8 and to analyze the results of interviews science subjects teachers regarding the learning process that is not built. From the analysis of the syllabus and science teacher interviews, the researchers provide design solutions on the topic of learning type Share pressure, the learning process is based on the design that has been created, as well as formative assessment.

## RESULT AND DISCUSSIONS

- **Structure of the Subject Matter**

Analysis of the material of pressure based on the curriculum of 2013 is as follows:

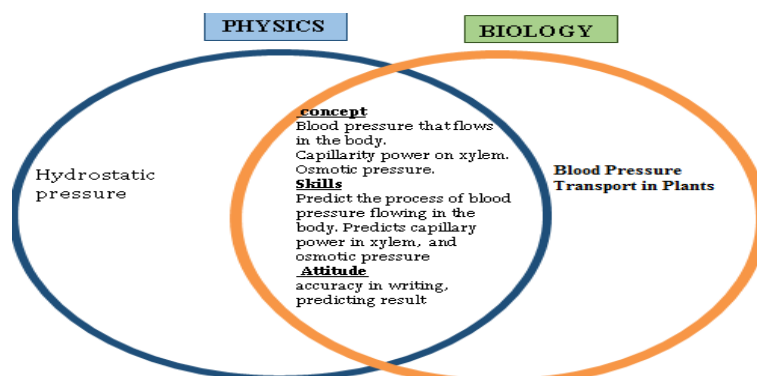
KD: 3.8 explaining the pressure of substance and its application in everyday life, including blood pressure, osmosis, and a transport network capillarity in plants.

4.8 Presenting data from experiments to investigate the pressure of the liquid at a certain depth, the buoyancy, and capillarity, for example in the plant stem.

KD 3.8 and 4.8 based on the material contained on the theory that stress the integration of physics and biology, with sub-material physics of solids is pressure, hydrostatic pressure, Pascal law and the law of Archimedes. While the biological material is blood pressure, osmosis, capillarity transport networks in plants (Kemendikbud, 2017).

- **Design Science Integrated and Organization of Material**

- design science unified type of share



At the material pressure of the design using science unified type of share for which according to Fogarty (1991) in his book *How to Integrate the Curricula*, said there are 10 types of integration models, one of which is the type of share where on a share-type group *Several across disciplines* or interdisciplinary groups. Pressure material is composed of two disciplines that the disciplines of physics and biology are complementary and in planning or teaching creates a focal concept, skills, and attitudes that type of integrated science teaching is very appropriate to share applied to the material pressure.

- **Organizations Subject Matter**

Organizations subject matter on the material that is pressure on blood pressure and legal material pascal, at this very second material has a linkage that can be explained simultaneously, for which the material blood pressure is the application of legal materials pascal. Furthermore, the second organization that is there a link between the material pressure liquid with material transport in plants (power capillarity in the xylem and the osmotic pressure) as well as its application in everyday life.

- **Learning Strategy**

1. The learning objectives based alignment material above is :

- Describes the hydrostatic pressure and pascal legal instruments /objects in everyday life
- Pascal Explaining the link between stress and blood pressure in humans
- Explaining the factors affecting transport in plants.

Indicators of learning to be achieved, namely:

- By observing students can predict the occurrence of law pascal on tools/objects in everyday life
- By observing students can predict how the relationship between law pascal and blood pressure in humans
- By observing students can predict the occurrence of the law of Archimedes the tool/object in everyday life
- By observing students can predict the factors affecting transport in plants.

2. Model: *Inquiry -Based Learning*.

**Approach:** Scientific, interactive demonstrations.

**Method:** Lecture, demonstration, and discussion of the learning sequence.

- Learning materials are first submitted by teachers, demonstration material about pascal law, in which this material is a material prerequisite to understanding the material blood pressure.
- Once you understand your pascal legal materials, students can be given a demonstration of the material flowing blood pressure throughout the body. Where students described the abnormalities in the blood vessels that is how the blood pressure when the blood vessels have a pile of fat and do not have a pile of fat.
- Furthermore, after understanding the material flowing blood pressure throughout the body, students are given the material link between blood pressure by law pascal through a demonstration that has been done.
- Then the next matter that the teacher gave a demonstration material hydrostatic pressure which saw the difference in pressure generated in the U pipeline when funnel was added to the water and when the funnel was added to the oil.
- Once students understand the material hydrostatic pressure, students were given a demonstration of the material transport in plants, that is by inserting two plants (water boyfriend and spinach) into baker glass and observe the increase in dye plants.
- In the material transport in plants, teacher explains about the factors that affect the transport of power plants, including capillarity in the xylem and osmotic pressure.
- **Assessment Formative**
  - Type assessment formative used are:

Concept /knowledge: Written test

Skills : Worksheet

Attitude : Sheets ratings observation

- **Procedure Judgment Is**

**The concept / knowledge** with the assessment procedure is to give a written test in the form of multiple-choice at the end of the learning aspects about C1 to C3 with a number of items were 8 questions, in 8 of these items consisted of questions about the law pascal, pascal legal link with blood pressure, hydrostatic pressure, the factors affecting transport in plants (xylem capillaries power and the osmotic pressure).

**His skill** with the assessment procedure using the assessment form of work, the skills measured in process skills discuss predictions to be made, with the aspect of process performance assessed that convey an idea / ideas / comments to make predictions, ask questions when difficulty in making predictions, answer questions (give reason) in making predictions, and the ability to appreciate the ideas, suggestions, and opinions of friends in making predictions. Guidelines, scoring using the rubric of performance appraisal discussion process in making predictions with the criteria for assessment using the numbers 1 through 3 as follows:

3 = criteria very complete

2 = criterion incomplete

1 = criteria are not exhaustive

**Attitude** to the assessment procedure using observation sheet during the learning takes place, observation sheet is to measure the form of the application of the attitude of conscientious students in predicting during the process of learning, behavioral aspects accurate in predicting provided with a number corresponding to the following criteria:

4 = accuracy is very good

3 = thoroughness good

2 = accuracy good enough

1 = accuracy unfavorable

## CONCLUSIONS

Design share-type learning material is very useful because the pressure at which the learning design of integrated science teaching design types share the concept of this pressure can facilitate learning and realize the effective, efficient and innovative, so as to realize the learning fun. With a fun learning embodied by an integrated science teaching in the material, pressure-type share is expected to be able to create educational reform towards a better, even if only an update in the class or school.

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